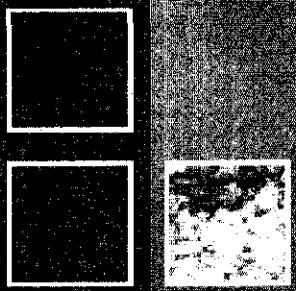

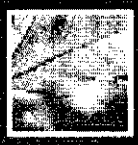

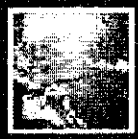

STRATUS CONSULTING

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Introduction

Historical data and analyses by Engel (2008a, 2008b, 2008c), Stevenson (2008a, 2008b, 2008c), Wells et al. (2008a, 2008b), and Cooke and Welch (2008a, 2008b) show that injuries to Oklahoma trust natural resources of the Illinois River system and Tenkiller Lake have occurred since at least 1970 as a result of the excess phosphorus from poultry waste and other sources. The evidence also indicates that these injuries will continue to occur for a considerable time in the future.

The report by Chapman et al. (2009) estimated the natural resource damages for a portion of those injuries, namely the combined injuries occurring between 2009 and 2058 (for the Illinois River system) and between 2009 and 2068 (for Tenkiller Lake). The report does not measure natural resource damages for injuries occurring before 2009.

A comprehensive accounting of damages would address injuries occurring in the past as well as the future. For example, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) authorizes trustees to recover damages for the period of time, starting in 1981, during which injury occurs, pending restoration to conditions that should have existed but for the release of contaminants (interim losses) [43 CFR 11.83(c)]. Damages for interim losses in this case clearly include damage estimates for both past and future injuries.

The present report evaluates damages for past natural resource injuries occurring between 1981 and 2008.

Conceptual Approach

There are two approaches to measuring damages for the total value losses resulting from the injuries to Oklahoma public trust resources in the Illinois River system and Tenkiller Lake occurring during the period 1981-2008: an original study that measures total value of losses, or a transfer of information existing now. For an original study, one would have needed to conduct a study similar to Chapman et al. (2009) in 1980. A transfer of existing information is known as a *benefits transfer* analysis. The first approach is not feasible, and so we adopt the benefits transfer approach.

Bergstrom and De Civita (1999, p. 79) offer the following definition of benefits transfer:

> Benefits transfer can be defined practically as the transfer of existing economic values estimated in one context to estimate economic values in a different context .... In the case of natural resource and environmental policies and projects, benefits transfer involves transferring value estimate from a "study site" to a "policy site" where sites can vary across geographic space and or time.